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NEWSLETTER OF THE AUSTRALIAN NETWORK FOR PLANT CONSERVATION

Hot Fires - the Biggest Threat to a Central Australian *Acacia* Community

Prue Adamson, *Threatened Species
Network NT*

The threatened *Acacia undoolyana* grows in the East MacDonnell Ranges about 80km from Alice Springs. With it, four other nationally and Northern Territory listed threatened species, *Hibiscus sturtii* var. *sturtii*, *Minuria tridens*, *Spartothamnella puberula*, and *Ricinocarpus gloria-medii*, have been found and mapped over the last five years. Recently the recovery plan for *A. undoolyana* has been released making several easily achievable management recommendations to ensure that the species (and associated community) survive.

Acacia undoolyana was probably once widespread across the MacDonnell Ranges. Now it occurs predominantly on steep south facing slopes of acidic sandstone and quartzite in areas which are relatively protected from fire. *Acacia undoolyana* matures slowly in ten years to be a small tree and can live to 100 years. *Ricinocarpus gloria-medii* (Glory of the Centre Wedding Bush), often grows in the

thick leaf litter and shade afforded by mature *A. undoolyana*.

The research and recovery team has determined that hot fire is this community's greatest threat. Hot fires appear to kill the immature *A. undoolyana* plants, and the *Ricinocarpus* is quickly replaced with the more fire tolerant and fast growing spinifex species. Over the last 150 years burning patterns have changed and fuel loads have increased with the extensive growth of spinifex (*Triodia brizoides* and *T. longiceps*). These now grow in all accessible areas of the MacDonnell Ranges with up to 63% cover. Dislocation of Aboriginal people from their traditional lands and roles as land managers is thought to be the principal factor contributing to this change.

With its high resinous content, spinifex carries very hot fires which can burn for weeks covering vast areas in the hot and dry conditions typical to the arid region. Fire sensitive plants and remnant species disappear under these conditions.

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National Coordinator's Report

Jeanette Mill

The year has started with a flurry of activity. The final drafts of the Germplasm Conservation Guidelines and the Guidelines for the Translocation of Threatened Plants have been completed. They have been sent to the Endangered Flora Network for presentation to the ANZECC Standing Committee on Conservation for consideration for endorsement. Thanks to all the working group members, others who assisted, to Kings Park and Botanic Gardens for organising the editing and the Endangered Species Program for financial support.

Conference organisation is in full swing. The range of interesting papers, workshops and field trips planned reflects the diversity of interests in the ANPC. See page 5 of this newsletter. You will receive a registration brochure shortly if not already.

The ANPC continues to receive growing international recognition, with an approach by Chair of the IUCN Species Survival Commission (SSC), David Brackett, inviting the ANPC to act as the Australasian Plant Specialist Group during the current IUCN quadrennium. A meeting of the SSC Steering Committee at the IUCN World Conservation Congress in October 1996 concluded that a separate Australasian Plant Specialist Group would lead to an overlap which could be avoided by the proposed arrangement.

Australian plant conservation should benefit from the higher profile, through such means as

regular reports to the SSC and articles in IUCN publications such as *Species*, the SSC Newsletter.

I would be pleased to receive comments or enquiries from members about this, and hope to provide information about IUCN and the SSC in *Danthonia* in future. If members have ideas for articles in IUCN publications, please contact us. The story by Ross Doig (SGAP) about *Haloragodendron lucasii*, (*Danthonia* June 1996) was picked up by *Plant Conservation News*, the SSC newsletter for plants.

David Given, the new Chair of the SSC Plant Conservation Committee, will be the contact, with Wendy Strahm, Plants Officer with IUCN. David is based in New Zealand and he, and other contacts there, will provide the link across the Tasman.

ANPC Advisory Committee

Dr David Aldous
Dr Tony Brown
Dr Mick Brown
Mr Stephen Harris
Mr Russell James
Mr Ed McAlister
Ms Margaret Moore
Prof Henry Nix
Dr Bob Parsons
Mr Tim Richmond

Danthonia

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(Continued from page 1)

It is well planned fire management in the East MacDonnell Ranges that will ensure the survival of the *A. undoolyana* community.

The Recovery Plan Recommendations and Actions for Improved Fire Management:

- Develop better knowledge and mapping of fire history in the area to enable site specific fire management planning.
- encourage land managers to plan all burning for cool times or wet conditions (such as after high summer rain when the soil moisture content is up), thus ensuring a mosaic pattern with maximum fuel reduction around the *Acacia undoolyana* and *Ricinocarpus* communities.
- Have local community groups such as the National Threatened Species Network (NT) and Society for Growing Australian Plants continue to offer support with working bees and workshops helping to locate threatened species on the ground.
- Continue having local rangers organise volunteers to remove spinifex from around some stands prior to burning.
- The new Alice Springs Desert Park managed by the Parks and Wildlife Commission NT plans to re-create an East MacDonnell threatened species habitat in stage II to further public education and community support for this, and other, threatened communities.

Acacia undoolyana and the other associated threatened species appear at this stage to be 'out of the woods', but regional approaches to reducing spinifex cover and returning to past burning patterns are probably the answer for many other species aside from *A. undoolyana*.

Illustrations by Christie Yon



Awards

AMEEF Award to Dr Kingsley Dixon

Adapted with permission from Landlines, the newsletter of the Minerals Council of Australia

Dr Dixon, Assistant Director of Plant Science with the Kings Park and Botanic Garden, West Perth, has won the Excellence Award - Individual, of the Australian Minerals and Energy Environment Foundation (AMEEF).

The award, announced along with others in October 1996, is given for a significant personal contribution towards environmental practice in the minerals and energy industries.

Dr Dixon developed simple smoke technology, first used in South Africa, to cultivate cheaply many Australian plants which had been difficult and expensive to grow.

AMEEF said that the work had major implications for minesite rehabilitation and species protection. Smoke can also be used to assist with the propagation of many endangered species, greatly increasing their survival chances.

The AMEEF citation (Ed. as quoted in a letter from the Foundation) reads:

"For outstanding achievement in the propagation of endangered and recalcitrant native Australian plants, including *inter alia* the use of smoke as a germination stimulant."

The award is valued at \$10,000.

Young Achiever Award for the Environment

Adapted with permission from the Media Release of 24 January 1997 of the Conservation Council of South Australia

Congratulations to Vicki-Jo Russell from the Conservation Council of SA for being given the award of Young Australian of the Year, Environment Category, by the Prime Minister in January 1997.

Michelle Grady, Executive Officer of the Council, described Vicki-Jo as "a committed and dedicated young South Australian".

She has worked for the Council for three years, first as the Environment Information Officer and recently as the Coordinator of the National Threatened Species Network's SA office.

Her work has included liaison with community groups, individuals, school students, government agencies and politicians - especially regarding endangered species recovery.

She has also been very involved in *Environment SA*, the Conservation Council's excellent publication.

Congratulations also to Vicki-Jo from the National Office of the ANPC. Your networking has included writing a front page article, "Temperate Grassland Project in South Australia", for *Danthonia* Vol 5, No 2, September 1996.



Dr Dixon is pictured receiving the award from the Federal Minister for the Environment, Senator Robert Hill. Behind Dr Dixon is the Executive Officer of AMEEF, Steven Munchenberg.

(Photograph courtesy of AMEEF).

Conference News

ANPC Third National Conference: Sharing the Vision

**June 23-27 1997: Coffs
Harbour Education Campus,
Coffs Harbour, NSW**

Here at the National Office we have been putting together information for the conference registration brochure, choosing and inviting speakers, receiving lots of interest in presenting posters and drafting a program. Details will be in the brochure, but here are some points to note.

The venue is the Coffs Harbour Education Campus, 10 minutes south of the city centre and 5 minutes from the airport. Coffs Harbour itself is about halfway between Sydney and Brisbane. It has a subtropical climate, and in June the average maximum temperature is 19 degrees C.

Transport to Coffs Harbour includes air services, trains and coaches. In addition, there is local transport and we have arranged daily buses from certain accommodation venues to the conference venue and back.

Accommodation can be arranged by the Coffs Harbour Visitor and Convention Bureau from a wide range of options: caravan parks to five star hotels.

Broad topics to be covered include recovery plans, community projects, ANPC

regional group activities, plant reintroductions, population management, seed and other germplasm conservation, education, information and developments in threatened species legislation.

Members will have a great opportunity to have their say in the future of the ANPC, and help work out plans for the next two years.

The provisional program:

Monday 23rd June: an optional afternoon visit to the North Coast Regional Botanic Garden, followed by a welcome reception at the Campus. The registration desk will be open.

Tuesday 24th to Thursday 26th June: Papers, posters and workshops.

Wednesday 25th June: Conference dinner (optional) from 7pm at a city venue.

Friday 27th June: Optional field trips.

- Dorrigo National Park (NSW NPWS).
- Bongil Bongil, the private botanic garden of John Wrigley, and Bruxner Park Flora Reserve.
- Sites of the endangered *Zieria prostrata*, and Bruxner Park Flora Reserve (NSW State Forests).

Keynote speaker:

Dr Kingsley Dixon,
Assistant Director of Kings
Park and Botanic Garden.

Other speakers include:

Dr David Given from New Zealand (Chair of the IUCN Species Survival Commission's Plant Conservation Committee), Dr Peter Bridgewater (Head of the Biodiversity Group of Environment Australia), Andrew Smith, Education Officer at

the Royal Tasmanian Botanic Gardens, and David Hassell and Stuart Thompson from TEMCO (producer of alloys for steel).

The Kings Park Research Group will demonstrate how to use smoke for germinating rare species, and for revegetation and bushland management. One aim of the team is to produce an integrated management package which will combine the use of smoke concentrate with selective herbicides and direct seeding to restore and revegetate remnant vegetation.

For more information about registration, see the brochure, or contact Josephine Hatte or Julie Burton from Norsearch Conference Services.

Phone: 066 203 932

(International + 61 66 203 932)

or 1800 649 202;

Fax: 066 221 954

(International + 61 66 221 954);

Email: jburton@scu.edu.au

For more about the conference content, contact Jeanette Mill or Deborah Edwards at the ANPC National Office:

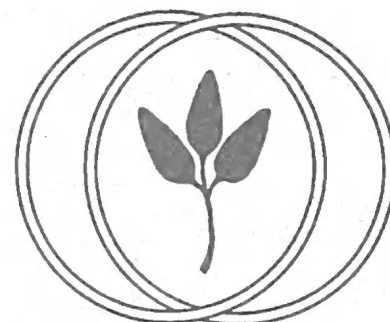
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Conservation and Farming in the Western Australian Wheatbelt

Alison Doley, Landowner

Koobabbie is a 6,885 ha property in the Waddy Forest District 250 km north of Perth. Selected by my grandparents in 1906, it has been farmed by my husband John and myself since 1966. The climate is Mediterranean with an average rainfall of 339mm. We produce wool, prime lamb, beef, wheat, lupins, oats, barley and chick peas.

Production takes place on 4,028 ha. The remaining 2,857 ha, or 41.5% of the property, is uncleared and comprises a portion of a salt lake drainage system, rocky hills, shelter belts and drainage lines. There are also some areas set aside for flora conservation. Since 1970 we have erected 44 km of fencing to protect 48 areas from 2 to 1,682 ha in size. Some management is required including hand pulling of exotic weeds such as wild radish (*Raphanus raphanistrum*) and Pattersons Curse (*Echium plantagineum*). Rabbits are controlled through poisoning and warren ripping. The calicivirus has not reached this district. Kangaroo numbers have increased to a point where they are damaging the bush and it has become necessary to control numbers.

Soils on the property range from the sandy rises and samphire flats of the salt lake system, red and grey loams of the valley floor, red soils

derived from dolorite dykes, poor shallow soils derived from decomposed granite, laterite, yellow sand over gravel and deep yellow sand.

To date over 300 indigenous plant species have been identified, including 22 species of *Eucalyptus* and 32 species of *Acacia*. Of these 4 species are declared rare or Priority One (Poorly Known) flora. There are no reserves of any consequence in this area. Because it was settled early in the century the roads are all one chain (20.8 m) wide rendering them useless for the long term preservation of flora given current attitudes of local Shire Councils. Preservation of remnant vegetation on private property is essential for the maintenance of biodiversity.

In 1979 a wildflower study group was formed. A number of leading botanists and environmentalists spoke and led excursions. The group has since been replaced by the Waddy Forest Land Conservation District which ranks preserving biodiversity with controlling salinity and water logging and increasing productivity. Involvement in this network increases local knowledge and benefits both farmers and researchers.

In August 1995 Diana Papenfus visited in the course of conducting botanical surveys under contract to the Department of Conservation and Land Management (CALM). After being shown a photocopy of a pressed *Chorizema humile* specimen (known to me by another name), I took her to a population of over 50 plants growing in the first area of remnant vegetation fenced in

1970. These prostrate plants are declared rare flora. They are hard to see but must be very palatable because kangaroos are grazing them heavily in late spring.

Diana was a regular visitor during 1996, staying in one of two self contained cottages we have available. One day was spent counting 851 *Ptilotus caespitosus* plants on the salt lake system. Collected by James Drummond in about 1840 it was presumed extinct until I forwarded a specimen to the herbarium in 1987. Since then other populations of this Priority One plant have been located including one on the Pallinup river near Albany.

The *Ptilotus* counted, I took Diana to see the *Halosarcia koobabbiensis* m.s. The only known population of 900 plants grows around one lake on our land. Water was lapping the tops of the algae-festooned branches and the Priority One plants appeared to be on the way to extinction. By January the lake is dry and the fresh growth with its many blue-green segments has a subtle beauty.

An *Alyxia buxifolia* caught Diana's attention near the lake edge. Four days before I had come on *Drakonorchis mesocera* on a road verge while acting as Diana's assistant. So I was very interested to see a similar orchid under the bush. These were *Drakonorchis drakeoides*, declared rare flora. Approximately 100 plants were counted on the north and west side of the lake. There are other populations, but its preference for lake margins means it is threatened by increasing salinity.

While on a Landcare picnic and bushwalk in August, I

collected several specimens for Diana, one being *Acacia recurvata*, a species she had been surveying. It brought the number of known populations to three.

Other regular visitors are John and Judy Blythe who have selected "Koobabbie" for the Royal Australasian Ornithologists Union 'Birds on Farms' Survey, a two year project requiring quarterly three hour surveys of 50 ha. An area of remnant vegetation on gravel and yellow sand over gravel chained in 1958, sown to oats and clover in 1965 and fenced from stock in 1982 has regenerated well with few weeds and been found to have the Southern Scrub Robin and Western Yellow Robin, birds which require undisturbed bush. Four other species have been identified. Already the survey is showing that remnant vegetation regardless of condition has a greater biodiversity than rows of planted trees can ever have.

In recognition of this fact CALM is currently implementing a Land for Wildlife Scheme. Landholders who join incur no legal obligations but will receive advice on effective management of their remnant vegetation. With only 10% of remnant vegetation remaining in the wheatbelt, and most of this in private hands, it is to be hoped CALM can fund the Scheme adequately.

Some 30 years ago I read *Between Wodjil and Tor* by Barbara York Main. This account of the complex interactions over a year in an area of bush made me determined to preserve every remnant of vegetation on "Koobabbie". We have 12 remnants left to fence.

Official Opening of the North Coast Regional Botanic Gardens Herbarium

*Taken from The Friends of the
North Coast Regional Botanic
Garden Newsletter February
1997 with the permission of the
President, Cynthia Floyd*

The official opening by Coffs Harbour City Council, of the North Coast Regional Botanic Garden Herbarium, will take place on Thursday 27th February. President Cynthia Floyd will hand over the keys to Mayor John Smith, and invited guests will be shown through the Herbarium, in small groups, under the supervision of Honorary Curator Alex Floyd.

Over the last six months the Herbarium subcommittee of Alex, George and Brian (Ed. That is, Alex Floyd, George Arnett and Brian Lane) have put a lot of work into ensuring that construction, and operating costs, financed by the Friends, totalling about \$34 000, proceeded smoothly.

Inside the Herbarium an enormous operational workload has been achieved through the efforts of our volunteers - Debbie Ryan on data entry - Barbie Richards and Peter Fraser on mounting specimens, and re-organising the collection. Outside the Herbarium building Ian Corbett, and the Council staff have done a great job. An entrance path, lawns and small parking area have been completed to facilitate the use of the Herbarium.

Editor: Mrs Floyd added in a telephone conversation that approximately 17 000 specimens have been donated by NSW Forestry, about 2000 from NSW National Parks and Wildlife Service and others from private collections. This makes a total of about 20 000 specimens already!

Readers will note from page 5 that there is an optional visit to the North Coast Regional Botanic Garden on Monday 23rd June as part of the ANPC Third National Conference. We'd like to thank the Council and the Friends for agreeing to this idea. This will be an excellent opportunity to see the work which has been carried out in the Gardens.



Viable or Vulnerable - Genetic and Demographic Studies on *Rutidosia leptorrhynchoides*

Dr Andrew Young, Centre for
Plant Biodiversity Research,
CSIRO, Division of Plant
Industry

Much has been made recently about the impacts of habitat reduction and fragmentation on the viability of plant populations and the implications for their conservation. In Australia, as in most countries, a growing number of native species are restricted to remnant habitat patches.

Concerns about remnant populations centre around the deleterious effects of small population phenomena such as: increased random fluctuations in demographic parameters (e.g. seedling mortality), genetic erosion owing to founder effects and genetic drift, and inbreeding depression. However, the actual roles of these processes in determining the fate of such populations are poorly understood. As a result managers are often unsure as to their long-term conservation value.

As part of a larger research project examining the viability of remnant plant populations, we have been conducting both genetic and demographic research on the grassland daisy *Rutidosia leptorrhynchoides* (Button Wrinklewort) for the past 18 months.

Rutidosia leptorrhynchoides has a disjunct geographic

distribution. It is known from 12 populations in the ACT and surrounding New South Wales and 9 populations in Victoria. Herbarium records suggest that both the number and size of populations have been reduced over the past 100 years as native grasslands have been destroyed for urban and agricultural development. Current *R. leptorrhynchoides* populations range in size from 5 - >70 000 plants and are often restricted to road margins, railway easements and cemeteries.

Chromosome counts show the species to be cytologically complex. Northern populations are primarily diploid ($2n=22$), while southern populations are mostly tetraploid ($4n=44$) or mixtures of tetraploids, diploids and triploids ($3n=39$). Other chromosome numbers also exist, possibly representing lines containing B chromosomes. In terms of conservation and recovery actions, it is clearly important that the observed chromosomal variation be taken into account when undertaking replanting, or translocation, as mixing plants with different chromosome numbers may result in the production of infertile offspring.

We have also found significant effects of remnant population size and isolation on both the amount of genetic diversity and the pattern of mating events within populations. Twenty of the 21 populations were screened for genetic diversity using allozyme markers. For the diploids, results show that small populations of less than a few hundred plants are genetically depauperate relative to larger intact populations of >10 000 plants. The same holds for the polyploid populations, though for any given size these maintain greater allelic richness than a comparable sized diploid population.

Similarly, plants in small isolated diploid populations produce twice as many full-sib seed (Ed. that is, seed with the same parents) as either large populations, or small populations close to large ones. This is due to increases in the amount of correlated matings. This shift towards increased relatedness of seed is a first step towards greater inbreeding in these small populations.



Photograph supplied by Andrew Young

It seems likely that these changes in mating are due to reduced pollinator service in small populations. Measurements of pollen deposition on stigmas in large and small populations show that the number of pollen grains per stigma can be as low as nil in small populations relative to 20-30 grains in large populations. Pollen viability also appears to be lower in some small populations.

These changes in mating pattern, pollen deposition and pollen quality in small populations appear to be reflected in seed set, which is about 60% lower than that observed in large populations.

Overall, such results certainly suggest that habitat fragmentation is associated with genetic and demographic changes in small remnant populations of *Rutidosia leptorrhynchoidea*. Our research is now focusing on understanding how these changes influence the viability of small populations. We are undertaking crossing experiments to assess the effects of parental relatedness on progeny fitness. We are also conducting comparative demographic monitoring of large genetically diverse, outbred populations vs small genetically depauperate, possibly inbred populations. This is providing data on seed production, germination, seedling survivorship and adult mortality. This information is being used to develop parameters for demographic matrix models which will allow prediction of the fate of populations with different genetic parameters under a range of "what if..." management scenarios.

(Dr Andrew Young can be contacted at the Centre for Plant Biodiversity Research, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra ACT 2601, Australia.
Phone: 06 246 5318;
Fax: 06 246 5249.

Conferences

The Relevance of the Threatened Species Conservation Act for the Management of Urban Bushland and Remnant Vegetation in Conserving Biodiversity

May 1-2 1997: Sydney. The Nature Conservation Council of NSW in association with the Threatened Species Network and the Environmental Defenders Office. This conference will cover questions such as whether the Act is protecting and enhancing biodiversity and how can the conservation of remnant natural vegetation and urban bushland benefit from the Act? There will be case studies of nominations and recovery plans, and discussion of community awareness and involvement strategies, key resourcing issues and the role and responsibility of local government and the NPWS.

For more information, contact Erica Higginson at the Nature Conservation Council of NSW.

Phone: 02 9247 4206;
Fax: 02 9247 5945.

Hidden Treasures

27 September - 3 October 1997: Annesley College, Greenhill Rd, Wayville, Adelaide, South Australia. This is the 19th Biennial Conference and Seminar of the Association of Societies for Growing Australian Plants.

Contact: The Chairperson, ASGAP Planning Committee, SGAP SA Inc., PO Box 304, Unley SA 5061.

Course

International Diploma in Plant Conservation Techniques Course

July 7-August 29 1997: Royal Botanic Gardens, Kew, UK. This course provides an established training program in key areas of plant conservation methodology to practitioners in botanic gardens and other institutions actively involved in conservation. It reviews the options open to conservationists by assessing the available techniques in order to develop an awareness of the options and provide students with the skills necessary to plan and implement actions. The fee is 2500 Pounds sterling

For more information, contact The Education Section, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB. UK.

Phone: +44 (0) 181 332 5623 or 5626;

Fax: +44 (0) 181 332 5610;

Email: courses@rbgkew.org.uk

A Plant Conservation Strategy For Wellington Conservancy, Department Of Conservation, New Zealand

*John Sawyer, Senior Conservation
Officer, Habitat Management,
Department of Conservation,
New Zealand*

The Wellington Conservancy Plant Conservation Strategy has been published recently by the Department of Conservation. That strategy describes the Department's responsibilities for the conservation of indigenous plants in the Wellington Conservancy.

Wellington Conservancy is one of the fourteen administrative regions of New Zealand's Department of Conservation and is situated in the lower half of North Island. The strategy was prepared by Raewyn Empson and John Sawyer with assistance from many people including staff at the Wellington Botanic Gardens and members of the Wellington Botanical Society.

A checklist of indigenous plant taxa of greatest conservation concern in the region is included in the strategy. That checklist includes: plant taxa which are threatened and in danger of extinction nationally or regionally; plant taxa found only in the conservancy (local endemic); plant taxa important for the survival of other threatened taxa; plant taxa for which limited information is available about their geographical distribution or their status in the wild.

Objectives for management of indigenous plant taxa are included in the strategy and many of the tasks to be undertaken to protect (and where necessary to restore) the indigenous plants of the region are described. The role of the Wellington Plant Conservation Network is also described in the strategy. The Network is a group of agencies and individuals such as: representatives from local authorities (city and regional councils); expert growers of indigenous plants; the Wellington Botanical Society and the Department of Conservation. Network members meet annually to take on responsibilities for plant conservation work.

At this time the Network is focused on ex situ cultivation of threatened species to generate material for future species recovery projects. The Department of Conservation is focused on working with landowners to protect surviving wild plant populations of threatened species. Future work will include ecological restoration of the plant communities in which threatened species are found and continued protection and inspection of existing wild populations of those species.

Copies of the strategy may be purchased (price NZ \$15) from Wellington Conservancy, Department of Conservation, Box 5086, Wellington, New Zealand, and it is also available from libraries. More information about the strategy, the regional plant database and current species recovery projects may be obtained by contacting the Wellington Conservancy as above.

Reference:

Empson R. A. and Sawyer J. W. D. 1996. **Plant Conservation Strategy - Wellington Conservancy**. Department of Conservation, Wellington, New Zealand.

Publications of Interest

Conservation and Biodiversity. Andrew P. Dobson. 1996. New York: Scientific American Library.

This book begins with discussions of species diversity, extinction rates, & how the amount of risk for an endangered species is determined. The author then goes on to discuss the ins & outs of attempts to manage endangered species & the economics of different conservation strategies. Dobson describes the changes in animal populations before & after management attempts, & he analyses the function of zoos & attempts to reintroduce species into the wild.

Habitat Restoration In Northern Victoria: A Guide to Principles and Practice. 1995. Steve Hamilton. Dookie College: Dookie Campus of the Victorian College of Agriculture and Horticulture Ltd.

The Flooded Gum Trees: Land Use and Management of River Red Gums in NSW. 1995. Nick Wilson. Sydney: Nature Conservation Council of NSW.

The Prostrate *Chorizema* (*Chorizema humile* Turcz.)

Diana Papenfus,
Department of Conservation
and Land Management, WA

The amber traffic light appearance of *Chorizema humile* may be symbolic: a warning to be prepared (to take care) to stop (or extinction may occur). In 1995 indications were such that the security of the taxon was verging on the red light. Known only from 17 plants in one population on a small area of remnant vegetation in the wheatbelt of Western Australia, *C. humile* was gazetted as Rare Flora under the WA *Wildlife Conservation Act* in an attempt to ensure its survival in the wild. Section 23F of this Act provides special protection for those taxa considered by the Minister for the Environment to be in danger of extinction, rare, presumed extinct or otherwise in need of special protection.

Two recent finds, and the discovery of another specimen in the Western Australian Herbarium from a further site, suggest that the situation of the Prostrate *Chorizema* may not be so parlous. Yet it remains very rare.

Description

The amber traffic light analogy comes from the radial to sprawling prostrate habit of the plant and the dense array of bright yellow flowers with red-brown markings which crowd trailing racemes. *Chorizema humile* is a small shrub growing to 60 cm in diameter, with leaves which

are alternate, obovate and mucronate at the apex, 4-16 x 2.5-5mm, tapering at the base into a short petiole which has a pair of persistent stipules. Up to 30 flowers on 2.5mm long pedicels occur on racemes 7-18mm long. The fruit is unknown.

Survey effort

Originally collected by James Drummond, a prolific early Western Australian flora collector, around the 1860s, *C. humile* was re-collected in 1948 in the Carnamah area, approximately 200km north of Perth. Since then, despite the conspicuous nature of the plant when flowering, only a further six collections from five locations have been lodged with the WA Herbarium.

Intense survey effort was dedicated to the species in October 1995 as part of a program to search for some of the State's rarer and poorly known flora. A search was made for all known populations, but no plants were found and it was feared that the species could have become extinct. Towards the end of the survey period an impromptu visit (for a pick-me-up cup of tea) was made to a landowner known to be strongly committed to incorporating nature conservation principles into farming practices. This proved to be fortuitous. Discussion of the plant triggered a memory of something once seen and following a visit to a conservation corridor of remnant vegetation 17 plants of *C. humile* were discovered! The taxon was not extinct after all. (Ed. Diana is referring to Alison Doley of "Koobabbie",

whose article is on pp. 6-7 of this edition).

Since the 1995 discoveries, two new populations have been found: a single plant growing on grassy verge near Carnamah, and a larger population of 20 plants. The discovery of the latter was an unexpected find. While searching late into the afternoon on a narrow gravel road 150km south of Carnamah, four or five prostrate plants, flowers shining in the evening light, were observed hugging the road verge. An inspection of the leaves confirmed they were *C. humile*. At the same time a large scale re-fencing project was noted as occurring on either side of the road. Clearance of vegetation along the old fenceline was in full swing and it was obvious that the demise of this *C. humile* population was imminent. Fortunately the landowners were located almost immediately and the importance of the find explained. The landowner agreed to protect the plants and a reprieve was given to *C. humile*, but the precarious nature of the survival of our flora was highlighted.

In December 1996, in the Western Australian Herbarium, an incorrectly identified specimen of *C. humile* was discovered residing in a folder of *Mirbelia* sp. This collection was made in 1931 by W. E. Blackall from Cue, 260km north west of Carnamah. This location has yet to be re-surveyed but if *C. humile* is present, this would extend its range to approximately 350km.

Following the discovery of the three populations, indications are that *C. humile*

grows in soils which are described as shallow clayey sand to loam associated on occasions with granite. One population is recorded in the scrub habitat of *Allocasuarina campestris*, *Acacia andrewsii* and *A. tetragonophylla*. The other populations are on cleared road verges beside cleared paddocks or degraded vegetation.

The taxon's rarity is being attributed to loss of habitat due to land clearance. 25% of remnant vegetation remains in the Wheatbelt, with 44% of this on private property. Many of these bushland areas are small or, in the case of road verges, narrow, and are under intense pressures from neighbouring agricultural practices. The prostrate delicate nature of the *C. humile* plants may also exacerbate the vulnerability of the taxon. Plants are easily destroyed by trampling or grazing by stock or rabbits. Weed invasion, potential road maintenance activities and chemical drift are currently having an impact on the known sites. The populations are also threatened by their small population size and the potential genetic bottleneck.

An Interim Recovery Plan is being prepared to manage the in situ populations of *C. humile*. Its intention is to ameliorate the most threatening factors in the absence of specific biological and rehabilitation information. Germplasm material is being collected by the Threatened Flora Seed Centre of the Department of Conservation and Land Management (CALM). Propagation trials by Kings Park and Botanic Garden using cutting material have been successful.

The story of *C. humile* is not entirely unique within Western Australia. The taxon is one of 2195 plants listed on CALM's Declared Rare and Priority Flora list. Of these, 302 are Declared Rare Flora, and many exhibit similar difficult predicaments.

References:

Patrick S. and Brown A. 1996. [Draft] **Declared Rare and Poorly Known Flora in the Moora District**. WA Wildlife Management Program. Department of Conservation and Land Management.

Taylor J. M. and Crisp M. D. 1992. A Revision of *Chorizema* (Leguminosae: Mirbelieae). **Aust. Syst. Bot.** Vol (5) No (3) pp 249 - 335.

Electronic Address

Environment Protection Agency (EPA) Environmental Impact Assessment network home page

<http://www.erin.gov.au/net/eianet.html>

Email: EIANetwork@dest.gov.au

The Federal Government is encouraging comments to be sent on various EIS guidelines. The network also has notifications of other Commonwealth projects, EIA contacts, legislation and agreements, international information and links to other world EIA sites.

Databases

CD-ROM: Agriculture and Natural Resources. Royal Melbourne Institute of Technology in association with the Standing Committee on Agriculture and Resource Management (SCARM), Land and Water Resources Research and Development Corporation (LWRRDC), Urban Water Research Association of Australia and the rural Research and Development Corporations.

One of the databases available is **Streamline: Australia's Natural Resources Database**, containing information on integrated catchment management, riparian and remnant vegetation, environmental and ecological management and other topics.

Another is **ARRIP: Australian Rural Research In Progress**. This contains information on current and recently completed Australian research projects which cover land resources, conservation, vegetation, ecology, the environment and other areas. There are contact details for the researchers on each project, plus descriptions, status and sponsorship details.

You can search all databases or one at a time.

Two discs will be published yearly, in September and March.

For more information contact Pamela Handyside, Database Manager, Infoscan Pty Ltd, GPO Box 155, Canberra ACT 2601.

Phone: 06 236 6267;

Fax: 06 236 6267;

Email: infoscan@acslink.net.au.

More Publications

International Law & the Conservation of Biological Diversity. 1996. Editors Michael Bowman and Catherine Redgwell. London: Kluwer Law International.

This work presents a thorough analysis of biodiversity concepts in international law and commentary on the 1992 United Nations Convention on Biological Diversity. The book examines the conservation of biodiversity in international law generally, including measures for the protection of the terrestrial, marine and Antarctic environment and particular features relating to sustainable use of biological resources, ex-situ conservation and plant genetic resources. It further analyses the controversial issues of intellectual property rights, the problems of implementation in the European Union and the United States, differences between developing and developed states and the role of indigenous peoples.

Listing of LWRRDC-Funded R & D Current Projects and Financial Reports September 1996. Canberra: Land and Water Resources Research and Development Corporation. Email: public@lwrrdc.gov.au.

Identification & Protection of Relict Box Woodlands in the Eastern Victorian Riverina. 1996. Tracy Clark. Canberra: Australian Nature Conservation Agency.

Restoring Diversity : Strategies for Reintroduction of Endangered Plants. 1996. Edited by Donald A. Falk, Constance I. Millar and Margaret Olwell. Center for Plant Conservation, Missouri Botanical Garden. Washington, D.C.: Island Press.

Listening to the Land : a Directory of Community Environmental Monitoring Groups in Australia. 1996. Jason Alexandra, Sandra Haffenden and Terry White. Fitzroy: Australian Conservation Foundation.

Conserving Biodiversity Through the Botanic Gardens of the World. Botanic Gardens Conservation International: A Review for 1994 and 1995. 1996. Kew, Richmond, Surrey: Botanic Gardens Conservation International.

This publication reports on activities in member countries, and gives valuable information on training, information databases (e.g. BGCI-DATA), publications and much more.

Report on Rare and Threatened Plants of North-eastern New South Wales. 1995. F. C. Quinn, J. B. Williams, C. L. Gross and J. J. Bruhl. Report prepared for New South Wales National Parks and Wildlife Service and Australian Nature Conservation Agency.

Flora of North-east NSW Forests. 1996. North East Forests Biodiversity Study Report No. 4. Northern Zone, Coffs Harbour: New South Wales National Parks and Wildlife Service.

Collation of Records of Rare or Threatened Plants of North-east NSW forests. 1996. North East Forests Biodiversity Study Report No. 4b. Northern Zone, Coffs Harbour: New South Wales National Parks and Wildlife Service.

Identification of Rural Landholders' Requirements for Nature Conservation Information. 1995. Toowoomba, Qld: Gordon Stone & Associates.

Proceedings of Workshop on Native Species Establishment on Mined Lands in Queensland. 8-10 November 1995. 1996. Ed. Sean M. Bellairs and Julie M Marris. St. Lucia: Centre for Mined Land Rehabilitation, University of Queensland.

Australia : State of the Environment 1996. Collingwood, Vic. : CSIRO.

Landscape Ecology, Function and Management. 1997. J. Ludwig, D. Tongway, K. Hodgkinson, D. Freudenberger and J. Noble. Collingwood: CSIRO Publishing.

This book talks about the function of rangeland landscapes, and the management of these and other landscapes for the conservation of habitats and biodiversity and for sustainable production.

Rural Land Degradation in Australia. 1996. Arthur Conacher. Oxford: Oxford University Press.

Regional Groups

South West Slopes Region

Paul Scannell, Albury Botanic Gardens

We have two new publications to look forward to for our region. Fleur Stelling is producing *A Native Vegetation Guide for the South West Slopes*. It is a joint project from the Department of Land and Water Conservation, Total Catchment and the National Landcare Program. Local groups and organisations will be involved in its preparation and it will become a great help for revegetation in the region. It will cover the bioregion of the South West Slopes.

The Monument Hill Parklands Association, Albury/Wodonga Field Naturalists, Regional Parklands Committee, Albury City Council and the City of Wodonga are currently producing a *Guide to Plants, Birds and Walking Trails of the Hill Country in Albury/Wodonga*. We are waiting on the new shortened name to be released soon.

A new fencing initiative is underway, funded by the Murray Catchment Management Committee and supervised by Greening Australia. For NSW landholders in the catchment area, it will hopefully assist in protecting the remaining remnant vegetation. Any further inquiries to Ian Davidson on 060 416777.

Roadside vegetation is a critical factor in an extensively cleared bioregion like ours. The Lockhart Shire Council have just appointed Louise Bull as coordinator for their Roadside Management Plan. Works on the Tumut and Coolamon Shires Roadside Plans are near completion. Hopefully all shires will follow suit.

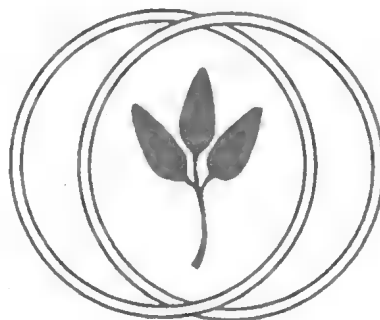
A meeting to establish the seedbank for the South West Slopes Region is to be held on 27 February. Any local groups wishing to become involved can contact me at the Albury Botanic Gardens - phone 060 238241.

Remember to start saving for the conference at Coffs Harbour, June 23-27. Sounds very informative and the more the merrier. Joint travel arrangements may be possible, so let me know if you're interested.

Contact: Paul Scannell.

Phone: 060 238 241;

Fax: 060 416 527.



Subtropical Region

The next meeting for this region's group will be held on 15 March 1997.

Where: Kimberley Park Community Centre, Shailer Park, Qld.

Time: 2.30 - 5pm.

Topic: Research and Recovery Work for the Endangered *Acacia porcata* and *Austromyrtus gonoclada*.

Program:

2.30 Dr Julia Playford (Lecturer, Department of Botany, University of Queensland, and Chair of the Forum for Plant Conservation) - the use of genetics in conservation of rare species and in the establishment of conservation areas.

3.00 Andrea Leverington (Conservation Strategy Branch, Qld Department of Environment) - Research into *Acacia porcata* (listed as endangered in the *Qld Nature Conservation Act 1992 Wildlife Regulations*): distribution, ecology, genetic variability, threatening processes and conservation.

3.30 Sharyn French (Bushland Management Officer, Logan City Council) - Recovery work for *Austromyrtus gonoclada*.

4.00 Field trip to site/s of *Austromyrtus gonoclada*.

More details are available on the invitations sent out.

RSVP by 12th March to: Sharyn French, Bushland Management Officer, Logan City Council (or leave a message with Park Depot Clerks Carmel or Allan).

Phone: 07 3826 5338;

Fax: 07 3805 5372.

SENSW and ACT Region

**Report of the meeting held
on 14 December 1996**

Ros Cornish, local landholder

Members of the SE NSW and ACT Region met at the Australian National Botanic Gardens to hear from the agencies responsible for the respective pieces of legislation covering threatened species in our region. Speakers talked about the ACT, NSW and Commonwealth legislation.

John Briggs, NSW National Parks and Wildlife Service (NPWS), gave us an overview and update on the NSW *Threatened Species Conservation Act 1995* (TSC Act). The legislation came into effect on 1 January 1996 and replaced the *Endangered Fauna (Interim Protection) Act 1991*. It also made substantial amendments to the *National Parks and Wildlife Act 1974* and the *Environmental Planning and Assessment Act 1979*. Of particular interest is that it includes plant species for the first time.

While a few problems are still arising with the TSC Act it has many strengths. In particular, one of the major features is the integration of the conservation of threatened species into the development control process under the *Environment Planning and Assessment Act*. There is an eight part test which sets out factors to be taken into account in deciding if there is likely to be a significant effect on a threatened species, population or community or their habitats.

If the test shows that there is such a threat then a Species Impact Statement and the concurrence of the NPWS are required before the development can proceed. Detailed guidelines are now available on the eight part test. However, there is a problem here if developers do not know that there is a threatened species, population or community, or habitat present. The NPWS, the Department of Urban Affairs and Planning and many local councils are trying to get such sites documented and appropriately zoned so that the problem is averted at an early stage.

The TSC Act also makes provisions for the preparation of recovery and threat abatement plans. Recovery plans must be prepared for each endangered and vulnerable species, population and community. For those listed as endangered prior to 1 January 1996 this must be done within five years and for each vulnerable species within ten years. For those listed after 1 January 1996 the plans must be done within three years for endangered species and within five years for vulnerable species. Threat abatement plans must be prepared for each listed key threatening process - within six years for those listed prior to 1 January 1996 and within three years for those after that. This is quite a task and involves a lot of resources as there are 196 vulnerable flora and 213 endangered.

The Southern Zone of NSW NPWS is involved in 21 recovery teams already. To assist developers and local government the Southern Region has run seminars and

visited areas to discuss the implications of new legislation.

The TSC Act is to be reviewed in June 1997 providing an opportunity to clarify some issues and revise it to overcome some of the problems that have arisen.

Russell James from the Threatened Species and Communities Section of Environment Australia (formerly Australian Nature Conservation Agency) spoke next. He gave an update on the implementation of the *Commonwealth Endangered Species Protection Act 1992* after first giving us an update on the restructure of the Environment Portfolio and a run down on the new Natural Heritage Trust. The changes in structure are designed to provide better integration of environmental issues within the government.

The Natural Heritage Trust is made up of five packages over five years:

- Vegetation (\$1.5 billion) including National Vegetation Initiative (\$318 million);
- Rivers (\$256 million) including Murray-Darling 2001 (\$150 million) and Rivercare (\$85 million);
- Biodiversity (\$96 million) including the National Reserves System (\$80 million) and the Endangered Species Program (\$16 million);
- Landcare (\$346 million) including the National Feral Animal Control Strategy (\$16 million) and the National Weeds Strategy (\$19 million); and
- Coasts and Clean Seas (\$100 million).

Russell then talked about the National Strategy for the conservation of Australian species and ecological communities threatened with extinction, its aims and objectives, and the Commonwealth's role in its implementation which includes the *Endangered Species Protection Act 1992* (ESP Act), the Endangered Species Program and the Invasive Species Program. He explained the significant features of the ESP Act, with respect to Commonwealth operations, and the process involved in the listing of nationally threatened species, including the role of two ministerially appointment committees - the Endangered Species Advisory Committee (ESAC) and the Endangered Species Scientific Subcommittee (ESSS). He also mentioned the review which is in process to revise the relationship between ROTAP and ANZECC flora listings. In future these lists will be merged and managed proactively allowing for faster updating. There will be easy access to the list via the Internet.

Russell's next topic was the Endangered Species Program which has funding of about \$5 million this financial year and how that will be spent. There is much to be done as Australia currently has 236 species of plants and 75 species of animals classified as endangered and 652 species of plants and 66 species of animals considered vulnerable. Finally, Russell talked about the Invasive Species Program which commenced in 1992-93 and has funding of about \$2 million annually. This program is an extremely important

contributor to the success of the Endangered Species Program. Projects include work on controlling major introduced feral animal pests which are listed under the ESP Act as key threatening processes - foxes, feral cats, feral rabbits and feral goats.

Sarah Sharp stepped into the breach when our speaker on the ACT legislation failed to show up. Sarah talked about the process of nominating plants and plant communities for listing as endangered or vulnerable and the role of the ACT Flora and Fauna Committee. So far one community and a number of plants and animals are listed including lowland temperate grasslands, and *Rutidosia leptorrhynchoides* and *Swainsona recta*.



Rutidosia leptorrhynchoides

Drawn by T. Woollcott

The ACT legislation requires Action Plans to be prepared within six months of listing. All species listed gain Special Protection Status, and activities that may have an impact them are restricted and require the Conservator to provide agreement for those activities.

Next SENSW/ACT Meeting

When: Saturday 22nd March 1997.

Where: NSW National Parks and Wildlife Service office, 6 Rutledge St, Queanbeyan.

Time: 2pm start followed by afternoon tea and site visit.

Program: "A focus on the Button Wrinklewort *Rutidosia leptorrhynchoides*".

Speakers: John Briggs, NSW National Parks and Wildlife Service.

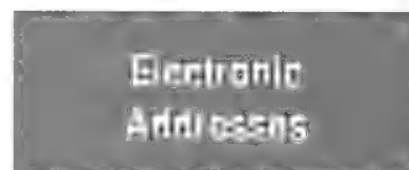
Jillian Pratten, Queanbeyan City Council.

Andrew Young, Centre for Plant Biodiversity Research, CSIRO.

RSVP: Please contact John Wilkes, Regional Coordinator, by 18th March 1997 if you can attend.

Phone: 06 238 2490;

Email: widgiewa@msn.com



Myall Park Botanic Gardens

Email: nitac@msn.com

Landcare Web

This is the Landcare home page and gives information on such items as weather, landcare education, conferences and contacts, and has a library with annotated links to landcare and agricultural sites in Australia and overseas.

<http://www.agfor.unimelb.edu.au/LCweb/LCweb.html>

Sydney Region

Report on the meeting held
8th February 1997

Patrick Medway, Executive
Director Illawarra Zoological
Society

On Saturday 8th February 1997, 56 members enjoyed a busy day touring a number of sites in southern Sydney.

Sydney ECOWORLD Rockdale

35 members arrived early at the Bicentenary Park and were conducted over the site of the proposed new development of Sydney ECOWORLD Rockdale. Here a Wetland Environmental Education Centre and Botanic Garden is planned near the wetlands of the Rockdale Wetland corridor on the site of a former rubbish dump and road reserve area.

Joseph Banks Native Plants Reserve

Moving on to the Joseph Banks Native Plants Reserve, 50 people were welcomed with a morning tea by President Leonie Hogue and ANPC member Craig Thompson, and a member of the management committee conducted visitors on an interesting tour of the highlights of this important native botanic garden.

Towra Point Nature Reserve

Meanwhile at Towra Point Nature Reserve everything was ready for a visit by the NSW Minister for the Environment, the Hon Pam Allan MP, to officially launch the new conservation group Friends of Towra Point Nature Reserve.

At about 11.15am some 85 guests arrived at the Reserve

and were joined by our ANPC members, swelling the numbers for the opening to about 135. Prominent local citizens, business leaders and local members of Parliament all joined with representatives of all local Sutherland Shire conservation groups to witness the ceremony.

I acted as Master of Ceremonies for the Official Launch and the Minister spoke in glowing terms of the wonderful work being carried out by volunteers throughout the Shire to clear and protect the environment of weeds. Councillor Kevin Schreiber; Mayor of Sutherland Shire Council, welcomed the Minister and spoke of the Council's commitment to protecting the environment and supporting the volunteers and Friends of Towra Point. Over 600 people are involved in a Council bushcare program coordinated by four trained officers of the Sutherland Shire Council.

New Tree Planting in the Nature Reserve

The Minister and official guests then planted a number of native trees of the same species as those collected by Sir Joseph Banks when he accompanied Captain James Cook to Botany Bay and Towra Point in April 1770. The native trees were mainly *Banksia integrifolia* and grown from seed collected in the Reserve and propagated by the Council Nursery at Gympie.

Everyone then moved on to the shores of Quibray Bay where over 100 native trees were planted by members and visitors under the supervision of National Parks and Wildlife Service (NPWS) officers. The

new Friends group will continue to remove exotic weeds from the Nature Reserve and replant the area with native trees and shrubs.

Barbecue Luncheon

After working up an appetite planting the new native trees in the Reserve, all visitors assembled at the Discovery Centre at Captain Cooks Landing Place, Kurnell for a wonderful barbecue lunch provided by the NPWS and the Wildlife Preservation Society and delightfully cooked by volunteers Colleen and Brett Murphy. Our figures indicated that we fed some 150 visitors over the lunch break and everyone thoroughly enjoyed the fellowship and hospitality provided for the occasion.

ANPC Sydney Regional Meeting

Following the luncheon, members assembled to hear reports on the local bush regeneration programs. I chaired the session and spoke on the role of the new Friends group for Towra Point Nature Reserve which includes the formation of specialist groups to care for the flora and fauna of the Reserve. Local ANPC members had been working over the past six months to remove weeds from the Reserve and have been responsible for the replanting program using indigenous native flora grown from local seed stock.

Maria Matthes (NPWS) gave us an update on the endangered Illawarra Greenhood (*Pterostylis gibbosa*) following our visit to the Dapto site last year, and reported the confirmation of the location of another site of

the orchid in the Hunter Valley. Maria also reminded members of the details of the new Threatened Species legislation concerning our rare and endangered native plants.

Andrew Horton and Nathan Summer (NPWS) gave a very interesting talk with coloured slides on the bush regeneration program being conducted in the Royal National Park. Following the disastrous bushfires in 1994, much work has been carried out to clean up the Park with extensive plant surveys being conducted, rubbish and exotic weeds removed and conservation plans outlined for the next few years.

ANPC Conference at Coffs Harbour 23-27 June 1997

Tracey Armstrong, our hardworking Coordinator, finished off the day with an update on plans for the ANPC Conference in Coffs Harbour in 23-27 June 1997.

She also called for nominations for details for the meetings throughout 1997 and a full program was drawn up. Details will be published shortly for the information of members.

Afternoon tea completed a very full day of activities which was enthusiastically received by all of our members from the Region. We look forward to meeting everyone at the next happy meeting in May and at the Conference in June.

(Ed. The Illawarra Zoological Society Incorporated was founded in 1988 to mark Australia's Bicentenary and dedicated to the conservation of Australia's rare and endangered wildlife).

Next Sydney Meeting

When: Saturday 17th May 1997.

Where: Visitors Centre Ku-ring-gai Wildflower Garden, 420 Mona Vale Rd, St Ives.

Time: 9.15 - 3.15.

Program: Site inspections in the area of local plants on the ROTAP list, including *Grevillea cayeley*, and an opportunity to see the Wildflower Garden.

Tracey Armstrong, the Regional Coordinator, will give a talk.

Final details will be sent to Regional members closer to the date.

Contacts: Ross Doig,
Phone: 02 9144 4166;
and Val Williams,
Phone: 02 9484 2106.

Conferences

Bushfire '97: Fire as a Land Management Tool

8-10 July 1997: Plaza Hotel, Darwin, Northern Territory.

Keynote speakers include Malcolm Gill from CSIRO, and topics include mosaic burning, ecological processes and operational issues. There will also be two field trips.

Contact: Barbie McKaige, CSIRO Tropical Ecosystems Research Centre, PMB 44, Winnellie NT.0821.

Phone: 08 8944 8411;

Fax: 08 89448444;

Email: Barbie.McKaige@terc.csiro.au

SOME EARLY NOTICES

Third National Tree Seminar

3-5 August 1997: Hyatt Regency Hotel, Coolumb, Qld. The conference is in association with the Queensland Arboricultural Association.

Contacts: Lyndal Plant,
Phone: 07 3403 2958;
and Mark McNamee,
Phone: 07 3273 7511.

Landcare: Changing Australia

16-19 September 1997: Convention Centre, Adelaide South Australia.

Contact: GPO Box 1671, Adelaide SA 5001.
Phone: 08 8303 9339;
Fax: 08 8303 9320.

Second National Conference on Integrated Catchment Management

29 September - 1 October 1997: Manning Clark Centre, ANU, Canberra, ACT.

Contact: Ron Hodges, 16 Larch Crescent, Mt Waverly, Victoria 3149.

Phone: 03 9802 4859;

Fax: 03 9802 2315;

Email: rbms@vicnet.net.au;

Internet:

<http://www.vicnet.au/~rbms>

The Australian Network For Plant Conservation

Membership List

The date (1995/6/7) indicates that the member has joined or renewed for that year. Addresses and names of contact persons are available from the National Office.

Corporate Members

Adelaide Botanic Gardens (1997)
Albury Botanic Gardens, NSW (1998)
Alcoa of Australia Ltd, WA (1997)
Australian Army (1995)
Australian National Botanic Gardens (1996)
Aust Tree Seed Centre, CSIRO (1996)
Barcaldine Shire Council, Qld (1996)
Biodiversity Group, Environment Australia (1996)
Bremer Inst. of TAFE, Qld (1996)
Centre for Plant Biodiversity Rsch, ACT (1997)
Centre for Plant Conservation Genetics, NSW (1997)
City of Frankston, Vic (1995)
Coffs Harbour City Council, NSW (1997)
Conservation & Land Management, WA (1995)
CSIRO Publishing (1996)
Eurobodalla Bot Garden, NSW (1997)
Flecker Botanic Gardens, Qld (1998)
Forestry Tasmania (1996)
George Caley Botanic Garden, NSW (1995)
Gladstone Tondoon Botanic Garden, Qld (1998)
Kings Park and Botanic Gardens, WA (1996)
LWRRDC, ACT (1997)
Logan City Council Libraries, Qld (1997)
Minerals Council of Aust, ACT (1997)
Mt Coot-tha Botanic Gardens, Qld (1997)
Nature Conservation Services, ACT (1997)
Norfolk Island Botanic Garden (1996)
North Forest Products, Tas (1997)
NSW National Parks & Wildlife Service (1996)
Parks and Wildlife Commission, NT (1997)
Parks Wildlife and Heritage, Tas (1997)
Queensland Herbarium (1997)
Randwick City Council, NSW (1997)
RGC Mineral Sands, WA (1997)
Royal Botanic Gardens, Melbourne, Vic (1996)
Royal Botanic Gardens, Sydney, NSW (1997)
Royal Tasmanian Botanical Gardens (1997)
Standing Committee on Forestry, ACT (1995)
Stony Range Flora Reserve, NSW (1996)
Townsville City Council (1997)
Transgrid Sydney, NSW (1996)

Transgrid Yass, NSW (1996)
Wollongong Botanic Gardens (1997)
Zoological Parks Board of NSW (1997)
Zoological Board of Victoria (1996)

International Associates

Botanic Gardens Conservation Intl, UK
Botanical Research Institute of Texas
Canadian Botanical Conservation Network
Center for Plant Conservation, USA
David Given, NZ (1997)
Honiara Botanic Gardens, Solomon Islands
Indian Society for Conservation Biology
Indonesian Network for Plant Conservation
Clive Jermy
Kebun Raya Indonesia
Noelline Kroon, South Africa
Missouri Bot. Gardens Library (1996)
National Botanical Institute, South Africa
PlantNet, UK
Rare Plant Consortium, Canada
Royal Botanic Gardens, Kew, UK (1996)
Society for Ecological Restoration, USA
Dr I Wayan Sumantera
Suva Botanical Gardens, Fiji
Vailima Botanic Gardens, Western Samoa
Wellington Plant Conservation Network

Other Organisations

Assn. of Soc. for Growing Aust Plants (1996)
Australian Arid Land Botanic Garden, SA (1997)
Aust Assn. of Bush Regenerators (1996)
Aust. Inland Botanic Gardens, Vic (1997)
Aust. Trust for Conservation Volunteers (1995)
Brunswick Valley Heritage Park, NSW (1996)
Burrendong Arboretum Trust, NSW (1996)
Community Biodiversity Network (1996)
Cotter Parkcare Group, ACT (1996)
Deakin Uni, Rusden Campus Library, Vic (1995)
Friends of Grasslands, ACT (1997)
Friends of North Coast Regional BG, NSW (1996)
Greening Australia (ACT/SENSW) (1998)
Greening Australia (NSW) (1996)
Greening Aust (NSW) Education (1995)
Greening Australia (Vic) (1996)
Greening Western Australia (1996)
Hunter Region Botanic Gardens, NSW (1997)
Illawarra Zoological Society, NSW (1995)
Indigenous Flora & Fauna Assn (1996)
Lismore Rainforest Bot. Garden (1997)
Macksville High School (1995)

Myall Park Botanic Garden, Qld (1996)
National Threatened Species Network (1997)
Network of Reg Bot. Gdns, Qld (1996)
Olive Pink Botanic Garden, NT (1997)
Pangarinda Arboretum, SA (1996)
Royal Aust Institute of Parks & Recreation (1995)
Royal Geographical Society of Qld (1997)
Royal Zoological Society of SA (1997)
SGAP Blue Mtns Group, NSW (1996)
SGAP - Canberra Region Inc (1997)
SGAP - Dryandra Study Group (1997)
SGAP - East Hills Group, NSW (1995)
SGAP - Far Nth Coast Gp, NSW (1997)
SGAP - Grampians Group, Vic (1995)
SGAP - Hobart District Group (1996)
SGAP - Ipswich Branch, Qld (1996)
SGAP - Maroondah Inc, Vic (1996)
SGAP - Newcastle, NSW (1998)
SGAP - New South Wales Ltd. (1996)
SGAP - North Shore, NSW (1997)
SGAP - Northern Group, Tas (1996)
SGAP - North West, Tas (1997)
SGAP - Queensland Region (1998)
SGAP - Southside, Qld (1995)
SGAP - South West Slopes, NSW (1996)
SGAP - Tasmania Region (1996)
Sunraysia Oasis Botanical Gardens, Vic (1996)
Tasmanian Arboretum Inc (1997)
Trust for Nature (Victoria) (1997)
Understorey Network, Tasmania (1996)
Wallum Action Group, Qld (1996)
Wildflower Society of WA (1996)
Wildflower Soc. of WA - Mandurah (1995)
Wildflower Society of WA, Nth Suburbs (1996)
World Wide Fund for Nature Australia (1998)

Individual Members

Gail Abbott, NSW (1997)
Dr David Aldous, Vic (1996)
Jan Allen, NSW (1997)
Ian Anderson, ACT (1998)
Margaret Bailey, NSW (1996)
Greg Bain, Vic (1996)
Bee & Bill Barker, Vic (1997)
Clive Barker, NSW (1996)
Tim Barlow, Vic (1997)
Robert Barnes, NSW (1996)
Peter Barrer, ACT (1997)
Stephen Barry, Qld (1996)
Brett Beecham, Vic (1996)
Stephen Bell, NSW (1996)
John Benson, NSW (1997)
Megan Birmingham, NSW (1996)
Robert Blackall, NSW (1996)
Dhyan Blore, NSW (1995)
Dr Robert Boden, ACT (1997)
Elizabeth Boesel, NSW (1997)

- Dr Barbara Briggs, NSW (1997)
 Dr AHD Brown, ACT (1997)
 Douglas Brown, Tas (1997)
 Louise Bull, NSW (1997)
 Richard Burns, Tas (1998)
 Dr G Burrows, NSW (1995)
 Geoff Butler, NSW, Hon. Life Member
 Geoff Carr, Vic (1997)
 Mary Cawte, NSW (1996)
 Calder Chaffey, NSW (1997)
 Irene Champion, Qld (1996)
 John Clark, ACT (1995)
 Anne Coates, WA (1997)
 Fiona Coates, Vic (1996)
 Anne Cochrane, WA (1997)
 Daniel Cole, NSW (1997)
 Ian Cole, NSW (1996)
 Jon Cole, NSW (1996)
 Ben Correy, NSW (1996)
 Russell and Sharon Costin (1996)
 Jennifer Cowie, NSW (1997)
 Ian Cox, NSW (1997)
 Isobel Crawford, ACT (1996)
 Simon Cropper, Vic (1997)
 P. Cruickshank, NSW (1997)
 Louise Cusack, NSW (1996)
 Paul Davies, NSW (1997)
 Richard Davies, SA (1996)
 John Delpratt, Vic (1996)
 Egon Demuth, NSW (1997)
 Susan Denham, NSW (1995)
 Ross Doig, NSW (1997)
 Stuart Donaldson, ACT (1996)
 Wendy Dossetor, ACT (1997)
 Geoffrey T Edwards, Qld (1997)
 Alison Elvin, ACT (1996)
 Elizabeth Fenton, Vic (1996)
 Paul Field, Vic (1996)
 Lance FitzGerald, NSW (1997)
 Paul Foreman, Vic (1997)
 Julie Foster, ACT (1996)
 Bill Gale, NSW (1997)
 Elizabeth George, WA (1998)
 Helen Glazebrook, NSW (1997)
 Kaye Glennon, WA (1996)
 Roger Good, ACT (1996)
 Dave Gordon, Qld (1997)
 Dr Janet Gorst, Qld (1997)
 Robert Gourlay, ACT (1997)
 William Grattan, NSW (1997)
 Matthew Gray, NSW (1995)
 Joanne Green, NSW (1995)
 Helen Grey-Smith, NSW (1997)
 Sandra Griffith, Qld (1996)
 Barrie Hadlow, ACT (1997)
 Bob & Noeline Harris, NSW (1997)
 Roger Hart, Christmas Is. (1997)
 Tim Hayes, NSW (1996)
 John R Hayter, Qld (1995)
 Els Hayward, Tas (1998)
 Michael Healey, NSW (1996)
 Jill Hickie, Tas (1995)
 Garth Hockly, Qld (1997)
 Patricia Hogbin, ACT (1997)
 Mrs S Hyne, NSW (1996)
 Greg Jackson, NSW (1996)
 Amanda Johnson, NSW (1997)
 Kerry Jones, Vic (1996)
 Alison Kelly, NSW (1995)
 Van Klaphake, NSW (1998)
 Heather Knowles, Qld (1996)
 Patty Kolln, NSW (1997)
 Jill Landsberg, ACT (1997)
 Gary Leonard, NSW (1996)
 Gordon Limburg, NSW (1997)
 John Litchfield, ACT (1997)
 Vicki Long, WA (1996)
 Bill McDonald, Qld (1997)
 Tien McDonald, NSW (1997)
 Alex Mackenzie, NSW (1997)
 R D Maher, Qld (1995)
 David Mason, NSW (1996)
 Maria Matthes, NSW (1997)
 Stephen Mattingley, ACT (1995)
 Lyn Meredith, ACT, Hon. Life Member
 Tammy Mills-Thom, NSW (1997)
 Geoffrey Mitchell, NSW (1997)
 Judith Moffatt, Qld (1995)
 Brian Mole, Vic (1996)
 Lorna Murray, Qld (1996)
 Sharon Nash, NSW (1997)
 Robyn Newman, NSW (1996)
 Nan Nicholson, NSW (1998)
 Alexander Nicol, NSW (1995)
 Henry Nix, ACT (1996)
 Ivana Noell, Qld (1995)
 Brett O'Donovan, NSW (1997)
 Jacqui O'Grady, Qld (1995)
 Peter Olde, NSW (1996)
 Joan Overeem, NSW (1996)
 Matthew Oxford, SA (1995)
 Dr. Bob Parsons, Vic (1997)
 Hugh Paterson & Francoise Matter, NSW (1997)
 Ian Perkins, NSW (1997)
 Plantique, NSW (1997)
 J Playford, Qld (1998)
 Tim Powe, ACT (1996)
 Brian Quinn, Vic (1996)
 Frances Quinn, NSW (1996)
 Murray Ralph, Vic (1995)
 Peter Ray, WA (1997)
 Ruth Readford, NSW (1996)
 Phil Redpath, NSW (1996)
 Dorothy Redreau, WA (1996)
 Bonni Reichelt, Qld (1997)
 Mark Richardson, NT Hon. Life Member
 Lill Roberts, Vic (1998)
 Brett Robinson Qld (1997)
 Mark Robinson, NSW (1998)
 Ailsa Rolinson, ACT Hon. Member
 Esma Salkin, Vic (1997)
 Alison Shapcott, NT (1997)
 Sarah Sharp, ACT (1996)
 Mark Sheahan, NSW (1996)
 Howard Smith, NSW (1995)
 Marilyn Smith, NSW (1997)
 John Smyth, NSW (1997)
 Diana Snape, Vic (1997)
 Fiona Spiers-Ashcroft, ACT (1996)
 Marilyn Sprague, Vic (1997)
 John & Irene Story, Qld (1998)
 Joe Swartz, NSW (1996)
 Jane Tarran, NSW (1996)
 Nicki Taws, ACT (1997)
 Roy Taylor, USA (1997)
 Technical Librarian, Qld (1995)
 Lyn Thompson NSW (1995)
 Jan Tilden, Qld (1995)
 Vivienne Turner, Vic (1995)
 Bindi Vanzella, NSW (1996)
 John Virtue, SA (1995)
 Dierk von Behrens, ACT (1997)
 Sue & Warner Wait, Tas (1997)
 Josephine Walker, NSW (1996)
 Bruce Wannan, Qld (1996)
 Chris Ward, NSW (1995)
 Sylvia Webber, NSW (1997)
 Matt White, Vic (1997)
 John Wilkes/Ros Cornish, NSW (1996)
 Jann Williams, ACT (1997)
 Mark Williams, NSW (1995)
 J & A Willinck, NSW (1997)
 Anne-Marie Wilson, ACT (1996)
 Brigitta Wimmer, NSW (1996)
 John Wrigley, NSW (1996)
 Martin Zierholtz, NSW (1997)

Donations Received from:

- John Benson (1996)
 Julie Foster (1996)
 EA George (1996)
 Gary Leonard (1996)
 Gordon Limburg (1996)
 A Mackenzie (1997)
 Nan Nicholson (1997)
 Plantique (1996)
 Martin Zierholtz (1997)